

Chemical Analysis Report

WAS-SECT-2021-01-25-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

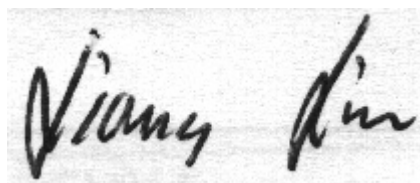
Event Description: **NWQI - Alligator Creek**
Request ID: **RQ-2021-01-25-05**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-FEB-2021 14:04

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Alligator Creek Upstream Of Sr 273

Collection Date/Time: 01/25/2021 10:33

Field ID: G3WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221151	EPA 180.1 Rev. 2.0	Turbidity	17		NTU	P392998	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P393267	
		Sulfate	0.88		mg SO4/L	P393268	
		Color (true)	54		PCU	P392941	
	SM 2120 B-2011	Total Alkalinity	8.6		mg CaCO3/L	P393052	
	SM 2540 C-2011	TDS	42		mg/L	P393480	
	SM 2540 D-2011	TSS	5	I	mg/L	P393354	
	SM 4500 F-C-2011	Fluoride	0.037	I	mg F/L	P393055	
2221157	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P393460	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P393300	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.079		mg N/L	P392885	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P393135	
	SM 5310 B-2011	Organic Carbon	9.0		mg C/L	P393049	
2221163	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P392943	
2221181	EPA 200.7 Rev. 4.4	Barium	14.2		ug/L	P393014	
		Calcium	4.61		mg/L	P393014	
		Iron	910		ug/L	P393014	
		Magnesium	1.30		mg/L	P393014	
		Manganese	35.6		ug/L	P393014	
		Potassium	1.8		mg/L	P393014	
		Sodium	2.1		mg/L	P393014	
		Strontium	8.7		ug/L	P393014	
		Tin	3.0	U	ug/L	P393014	
		Titanium	26.8		ug/L	P393014	
		Vanadium	2.0	U	ug/L	P393014	
		Zinc	5.0	U	ug/L	P393014	
	EPA 200.8 Rev. 5.4	Aluminum	589		ug/L	P393014	
		Antimony	0.050	U	ug/L	P393014	
		Arsenic	0.40		ug/L	P393014	
		Beryllium	0.019	I	ug/L	P393014	
		Boron**	11.1		ug/L	P393014	
		Cadmium	0.020	U	ug/L	P393014	
		Chromium	0.60	I	ug/L	P393014	
		Cobalt	0.147		ug/L	P393014	
		Copper	0.69	I	ug/L	P393014	
		Lead	0.69		ug/L	P393014	
		Molybdenum	0.15	U	ug/L	P393014	
		Nickel	0.50	U	ug/L	P393014	
		Selenium	0.20	U	ug/L	P393014	
		Silver	0.011	I	ug/L	P393014	
		Thallium	0.10	U	ug/L	P393014	
	SM 2340B	Hardness	16.9		mg/L	P393014	

Field ID: G3WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 02/11/2021.

Sample Location: Minnow Creek At Lovewood Rd

Collection Date/Time: 01/25/2021 09:41

Field ID: G3WA0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221152	EPA 180.1 Rev. 2.0	Turbidity	9.6		NTU	P392998	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P393267	
		Sulfate	0.54		mg SO4/L	P393268	
		Color (true)	60		PCU	P392932	
	SM 2120 B-2011	Total Alkalinity	5.9		mg CaCO3/L	P393052	
	SM 2540 C-2011	TDS	36		mg/L	P393481	
	SM 2540 D-2011	TSS	2	I	mg/L	P393355	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P393055	
2221158	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P393460	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P393303	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P392885	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P393135	
	SM 5310 B-2011	Organic Carbon	6.0		mg C/L	P393049	
2221164	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392943	
2221182	EPA 200.7 Rev. 4.4	Barium	13.4		ug/L	P393014	
		Calcium	3.35		mg/L	P393014	
		Iron	830		ug/L	P393014	
		Magnesium	1.16		mg/L	P393014	
		Manganese	32.4		ug/L	P393014	
		Potassium	1.2		mg/L	P393014	
		Sodium	2.0		mg/L	P393014	
		Strontium	8.0	I	ug/L	P393014	
		Tin	3.0	U	ug/L	P393014	
		Titanium	12.7		ug/L	P393014	
		Vanadium	2.0	U	ug/L	P393014	
		Zinc	5.0	U	ug/L	P393014	
	EPA 200.8 Rev. 5.4	Aluminum	302		ug/L	P393014	
		Antimony	0.050	U	ug/L	P393014	
		Arsenic	0.34		ug/L	P393014	
		Beryllium	0.010	U	ug/L	P393014	
		Boron**	10.4		ug/L	P393014	
		Cadmium	0.020	U	ug/L	P393014	
		Chromium	0.40	U	ug/L	P393014	
		Cobalt	0.085		ug/L	P393014	
		Copper	0.47	I	ug/L	P393014	
		Lead	0.42		ug/L	P393014	
		Molybdenum	0.15	U	ug/L	P393014	
		Nickel	1.1	I	ug/L	P393014	
		Selenium	0.20	U	ug/L	P393014	
		Silver	0.010	U	ug/L	P393014	
		Thallium	0.10	U	ug/L	P393014	
	SM 2340B	Hardness	13.2		mg/L	P393014	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Scurlock Creek At Pilgrim Rd

Collection Date/Time: 01/25/2021 11:22

Field ID: G3WA0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221153	EPA 180.1 Rev. 2.0	Turbidity	9.6		NTU	P392998	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P393267	
		Sulfate	0.36	I	mg SO4/L	P393268	
		Color (true)	130		PCU	P392932	
	SM 2120 B-2011	Total Alkalinity	4.2		mg CaCO3/L	P393052	
	SM 2540 C-2011	TDS	26		mg/L	P393481	
	SM 2540 D-2011	TSS	4	I	mg/L	P393355	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P393055	
2221159	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P393460	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P393303	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P392885	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P393135	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P393049	
2221165	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P392943	
2221183	EPA 200.7 Rev. 4.4	Barium	13.3		ug/L	P393014	
		Calcium	2.96		mg/L	P393014	
		Iron	940		ug/L	P393014	
		Magnesium	0.74		mg/L	P393014	
		Manganese	109		ug/L	P393014	
		Potassium	0.97	I	mg/L	P393014	
		Sodium	1.8	I	mg/L	P393014	
		Strontium	6.0	I	ug/L	P393014	
		Tin	3.0	U	ug/L	P393014	
		Titanium	22.7		ug/L	P393014	
		Vanadium	2.0	U	ug/L	P393014	
		Zinc	6.5	I	ug/L	P393014	
	EPA 200.8 Rev. 5.4	Aluminum	551		ug/L	P393014	
		Antimony	0.10	I	ug/L	P393014	
		Arsenic	0.44		ug/L	P393014	
		Beryllium	0.026	I	ug/L	P393014	
		Boron**	11.3		ug/L	P393014	
		Cadmium	0.020	U	ug/L	P393014	
		Chromium	0.71	I	ug/L	P393014	
		Cobalt	0.322		ug/L	P393014	
		Copper	0.86		ug/L	P393014	
		Lead	0.77		ug/L	P393014	
		Molybdenum	0.15	U	ug/L	P393014	
		Nickel	0.57	I	ug/L	P393014	
		Selenium	0.20	U	ug/L	P393014	
		Silver	0.010	U	ug/L	P393014	
		Thallium	0.10	U	ug/L	P393014	
	SM 2340B	Hardness	10.4		mg/L	P393014	

Field ID: G3WA0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 02/11/2021.

Sample Location: Unnamed Creek At Woodrest Rd

Collection Date/Time: 01/25/2021 12:27

Field ID: G3WA0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221154	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P392998	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P393267	
		Sulfate	0.74		mg SO4/L	P393268	
		Color (true)	110		PCU	P392932	
	SM 2120 B-2011	Total Alkalinity	2.8		mg CaCO3/L	P393052	
	SM 2540 C-2011	TDS	40		mg/L	P393481	
	SM 2540 D-2011	TSS	4	I	mg/L	P393355	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P393055	
2221160	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P393460	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P393303	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P392885	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P393135	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P393049	
2221166	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P392943	
2221184	EPA 200.7 Rev. 4.4	Barium	15.0		ug/L	P393014	
		Calcium	2.53		mg/L	P393014	
		Iron	890		ug/L	P393014	
		Magnesium	1.04		mg/L	P393014	
		Manganese	72.9		ug/L	P393014	
		Potassium	1.3		mg/L	P393014	
		Sodium	2.0	I	mg/L	P393014	
		Strontium	7.3	I	ug/L	P393014	
		Tin	3.0	U	ug/L	P393014	
		Titanium	23.5		ug/L	P393014	
		Vanadium	2.0	U	ug/L	P393014	
		Zinc	5.0	U	ug/L	P393014	
	EPA 200.8 Rev. 5.4	Aluminum	590		ug/L	P393014	
		Antimony	0.050	U	ug/L	P393014	
		Arsenic	0.40		ug/L	P393014	
		Beryllium	0.017	I	ug/L	P393014	
		Boron**	10.7		ug/L	P393014	
		Cadmium	0.020	U	ug/L	P393014	
		Chromium	0.62	I	ug/L	P393014	
		Cobalt	0.185		ug/L	P393014	
		Copper	0.69	I	ug/L	P393014	
		Lead	0.65		ug/L	P393014	
		Molybdenum	0.15	U	ug/L	P393014	
		Nickel	0.50	U	ug/L	P393014	
		Selenium	0.20	U	ug/L	P393014	
		Silver	0.010	U	ug/L	P393014	
		Thallium	0.10	U	ug/L	P393014	
	SM 2340B	Hardness	10.6		mg/L	P393014	

Matrix: W-SURF-FRH

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 02/11/2021.

Sample Location: Pine Barn Creek At Woodrest Rd

Collection Date/Time: 01/25/2021 11:53

Field ID: G3WA0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221155	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P392998	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P393267	
		Sulfate	0.20	U	mg SO4/L	P393268	
	SM 2120 B-2011	Color (true)	92		PCU	P392932	
	SM 2320 B-2011	Total Alkalinity	4.1		mg CaCO3/L	P393052	
	SM 2540 C-2011	TDS	28		mg/L	P393481	
	SM 2540 D-2011	TSS	3	I	mg/L	P393355	
2221161	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P393055	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P393460	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P393303	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392885	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P393135	
2221167	SM 5310 B-2011	Organic Carbon	7.9		mg C/L	P393049	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P392943	
2221185	EPA 200.7 Rev. 4.4	Barium	10.1		ug/L	P393014	
		Calcium	2.81		mg/L	P393014	
		Iron	1.27E+03		ug/L	P393014	
		Magnesium	0.95		mg/L	P393014	
		Manganese	166		ug/L	P393014	
		Potassium	1.4		mg/L	P393014	
		Sodium	2.2		mg/L	P393014	
		Strontium	6.3	I	ug/L	P393014	
		Tin	3.0	U	ug/L	P393014	
		Titanium	5.1		ug/L	P393014	
		Vanadium	2.0	U	ug/L	P393014	
		Zinc	5.0	U	ug/L	P393014	
	EPA 200.8 Rev. 5.4	Aluminum	217		ug/L	P393014	
		Antimony	0.061	I	ug/L	P393014	
		Arsenic	0.35		ug/L	P393014	
		Beryllium	0.010	U	ug/L	P393014	
		Boron**	11.8		ug/L	P393014	
		Cadmium	0.020	U	ug/L	P393014	
		Chromium	0.40	U	ug/L	P393014	
		Cobalt	0.331		ug/L	P393014	
		Copper	0.57	I	ug/L	P393014	
		Lead	0.32	I	ug/L	P393014	
		Molybdenum	0.15	U	ug/L	P393014	
		Nickel	0.50	U	ug/L	P393014	
		Selenium	0.20	U	ug/L	P393014	
		Silver	0.010	U	ug/L	P393014	
		Thallium	0.10	U	ug/L	P393014	
		Hardness	10.9		mg/L	P393014	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Unnamed Creek At Palmview Rd

Collection Date/Time: 01/25/2021 13:03

Field ID: G3WA0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221156	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P392998	
	EPA 300.0 Rev. 2.1	Chloride	5.7		mg Cl/L	P393267	
		Sulfate	0.85		mg SO4/L	P393268	
		Color (true)	97		PCU	P392932	
	SM 2120 B-2011	Total Alkalinity	3.7		mg CaCO3/L	P393052	
	SM 2540 C-2011	TDS	27		mg/L	P393481	
	SM 2540 D-2011	TSS	3	I	mg/L	P393355	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P393055	
2221162	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P393460	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P393547	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P392885	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P393135	
	SM 5310 B-2011	Organic Carbon	9.9		mg C/L	P393049	
2221168	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P392943	
2221186	EPA 200.7 Rev. 4.4	Barium	15.4		ug/L	P393014	
		Calcium	2.75		mg/L	P393014	
		Iron	950		ug/L	P393014	
		Magnesium	1.05		mg/L	P393014	
		Manganese	102		ug/L	P393014	
		Potassium	1.5		mg/L	P393014	
		Sodium	2.0	I	mg/L	P393014	
		Strontium	7.3	I	ug/L	P393014	
		Tin	3.0	U	ug/L	P393014	
		Titanium	33.8		ug/L	P393014	
		Vanadium	2.0	U	ug/L	P393014	
		Zinc	5.8	I	ug/L	P393014	
	EPA 200.8 Rev. 5.4	Aluminum	557		ug/L	P393014	
		Antimony	0.050	U	ug/L	P393014	
		Arsenic	0.47		ug/L	P393014	
		Beryllium	0.016	I	ug/L	P393014	
		Boron**	10.9		ug/L	P393014	
		Cadmium	0.020	U	ug/L	P393014	
		Chromium	0.61	I	ug/L	P393014	
		Cobalt	0.223		ug/L	P393014	
		Copper	0.79	I	ug/L	P393014	
		Lead	0.60		ug/L	P393014	
		Molybdenum	0.15	U	ug/L	P393014	
		Nickel	0.50	U	ug/L	P393014	
		Selenium	0.20	U	ug/L	P393014	
		Silver	0.010	U	ug/L	P393014	
		Thallium	0.10	U	ug/L	P393014	
	SM 2340B	Hardness	11.2		mg/L	P393014	

Matrix: W-SURF-FRH

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 02/11/2021.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P392998

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P393014

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393014

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393267

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393268

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393460

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393303

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393547

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392885

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393135

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392943

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B-2011
Batch ID: P392932

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P392941

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P393052

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P393480

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P393481

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P393354

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P393355

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P393055

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P393049

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P393014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.6		P	85 - 115
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	105		P	85 - 115
Manganese	98.4		P	85 - 115
Potassium	100		P	85 - 115
Sodium	102		P	85 - 115
Strontium	93.3		P	85 - 115
Tin	101		P	85 - 115
Titanium	95.7		P	85 - 115
Vanadium	94.6		P	85 - 115
Zinc	98.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P393014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.6		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	97.6		P	85 - 115
Beryllium	91.5		P	85 - 115
Boron	96.3		P	85 - 115
Cadmium	94.0		P	85 - 115
Chromium	96.1		P	85 - 115
Cobalt	103		P	85 - 115
Copper	96.4		P	85 - 115
Lead	100		P	85 - 115
Molybdenum	94.7		P	85 - 115
Nickel	96.8		P	85 - 115
Selenium	98.2		P	85 - 115
Silver	104		P	80 - 120
Thallium	99.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P393267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P393268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393460

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P393300

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P393303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P393547

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	103		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P392885

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P393135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P392943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	101		P	90 - 110

Reference Method: SM 2120 B-2011
 Batch ID: P392932

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.5		P	85 - 115

Reference Method: SM 2120 B-2011
 Batch ID: P392941

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.6		P	90 - 110

Reference Method: SM 2320 B-2011
 Batch ID: P393052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.5		P	93 - 104

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P393055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P393049

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P393014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221379	Barium	100		P	80 - 120
2221379	Calcium	107		P	80 - 120
2221379	Iron	109		P	80 - 120
2221379	Magnesium	114		P	80 - 120
2221379	Manganese	101		P	80 - 120
2221379	Potassium	104		P	80 - 120
2221379	Sodium	102		P	80 - 120
2221379	Strontium	96.2		P	80 - 120
2221379	Tin	105		P	80 - 120
2221379	Titanium	99.4		P	80 - 120
2221379	Vanadium	101		P	80 - 120
2221379	Zinc	108		P	80 - 120
2221555	Barium	104	103	P/P	80 - 120
2221555	Calcium	111	110	P/P	80 - 120
2221555	Iron	108	108	P/P	80 - 120
2221555	Magnesium	109	110	P/P	80 - 120
2221555	Manganese	103	102	P/P	80 - 120
2221555	Potassium	108	107	P/P	80 - 120
2221555	Sodium	106	105	P/P	80 - 120
2221555	Strontium	99.1	97.9	P/P	80 - 120
2221555	Tin	105	105	P/P	80 - 120
2221555	Titanium	102	103	P/P	80 - 120
2221555	Vanadium	101	101	P/P	80 - 120
2221555	Zinc	106	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P393014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221379	Aluminum	94.8		P	80 - 120
2221379	Antimony	98.8		P	80 - 120
2221379	Arsenic	95.1		P	80 - 120
2221379	Beryllium	88.7		P	80 - 120
2221379	Boron	97.5		P	80 - 120
2221379	Cadmium	93.3		P	80 - 120
2221379	Chromium	93.2		P	80 - 120
2221379	Cobalt	98.3		P	80 - 120
2221379	Copper	91.2		P	80 - 120
2221379	Lead	98.3		P	80 - 120
2221379	Molybdenum	93.7		P	80 - 120
2221379	Nickel	91.7		P	80 - 120
2221379	Selenium	94.4		P	80 - 120
2221379	Silver	105		P	80 - 120
2221379	Thallium	102		P	80 - 120
2221555	Aluminum	97.2	96.9	P/P	80 - 120
2221555	Antimony	99.9	99.2	P/P	80 - 120
2221555	Arsenic	98.0	97.4	P/P	80 - 120
2221555	Beryllium	88.9	87.8	P/P	80 - 120
2221555	Boron	97.3	98.2	P/P	80 - 120
2221555	Cadmium	94.1	93.9	P/P	80 - 120
2221555	Chromium	97.3	95.3	P/P	80 - 120
2221555	Cobalt	103	101	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221555	Copper	97.1	95.8	P/P	80 - 120
2221555	Lead	100	99.7	P/P	80 - 120
2221555	Molybdenum	95.1	93.3	P/P	80 - 120
2221555	Nickel	96.5	95.6	P/P	80 - 120
2221555	Selenium	98.7	98.1	P/P	80 - 120
2221555	Silver	89.0	101	P/P	80 - 120
2221555	Thallium	101	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393267

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220858	Chloride	96.1		P	90 - 110
2221156	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220858	Sulfate	96.5		P	90 - 110
2221156	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393460

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221157	Ammonia-N	98.8	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221124	Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221158	Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393547

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222080	Kjeldahl Nitrogen	104	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220896	NO2NO3-N	100	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221124	Total-P	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221127	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P393055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221212	Fluoride	102	102	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P393049

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221160	Organic Carbon	97.8	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P392998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221129	Turbidity	0.731	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P393014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221555	Barium	0.543	Spike	P	0 - 20
2221555	Calcium	0.975	Spike	P	0 - 20
2221555	Iron	0.0581	Spike	P	0 - 20
2221555	Magnesium	0.567	Spike	P	0 - 20
2221555	Manganese	0.685	Spike	P	0 - 20
2221555	Potassium	0.760	Spike	P	0 - 20
2221555	Sodium	0.658	Spike	P	0 - 20
2221555	Strontium	1.18	Spike	P	0 - 20
2221555	Tin	0.279	Spike	P	0 - 20
2221555	Titanium	0.734	Spike	P	0 - 20
2221555	Vanadium	0.811	Spike	P	0 - 20
2221555	Zinc	1.00	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221555	Aluminum	0.266	Spike	P	0 - 20
2221555	Antimony	0.669	Spike	P	0 - 20
2221555	Arsenic	0.585	Spike	P	0 - 20
2221555	Beryllium	1.28	Spike	P	0 - 20
2221555	Boron	0.853	Spike	P	0 - 20
2221555	Cadmium	0.276	Spike	P	0 - 20
2221555	Chromium	2.04	Spike	P	0 - 20
2221555	Cobalt	1.40	Spike	P	0 - 20
2221555	Copper	1.34	Spike	P	0 - 20
2221555	Lead	0.287	Spike	P	0 - 20
2221555	Molybdenum	1.89	Spike	P	0 - 20
2221555	Nickel	0.939	Spike	P	0 - 20
2221555	Selenium	0.554	Spike	P	0 - 20
2221555	Silver	12.3	Spike	P	0 - 20
2221555	Thallium	0.224	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220858	Chloride	0.391	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220858	Sulfate	1.50	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221157	Ammonia-N	0.00405	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221124	Kjeldahl Nitrogen	2.84	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221158	Kjeldahl Nitrogen	2.04	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222080	Kjeldahl Nitrogen	1.64	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220896	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221124	Total-P	0.972	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221127	O-Phosphate-P	0.972	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
 Batch ID: P392932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221123	Color (true)	5.90	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
 Batch ID: P392941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221286	Color (true)	1.90	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P393052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221212	Total Alkalinity	1.25	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
 Batch ID: P393480

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221211	TDS	0.905	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
 Batch ID: P393481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221212	TDS	2.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
 Batch ID: P393055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221212	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
 Batch ID: P393049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221160	Organic Carbon	0.100	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103226

Included Lab Sample IDs: 2221151, 2221152, 2221153, 2221154, 2221155, 2221156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.4	97.8	P/P	90 - 110
Chloride	98.8	97.4	P/P	90 - 110
Sulfate	97.1	97.6	P/P	90 - 110
Sulfate	97.5	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103236

Included Lab Sample IDs: 2221157, 2221158, 2221159, 2221160, 2221161, 2221162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A103249

Included Lab Sample IDs: 2221152, 2221153, 2221154, 2221155, 2221156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	99.2	P/P	90 - 115

Reference Method: SM 2120 B-2011

Run ID: A103255

Included Lab Sample IDs: 2221151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.6	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103257

Included Lab Sample IDs: 2221163, 2221164, 2221165, 2221166, 2221167, 2221168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	98.7	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103269

Included Lab Sample IDs: 2221151, 2221152, 2221153, 2221154, 2221155, 2221156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A103283

Included Lab Sample IDs: 2221157, 2221158, 2221159, 2221160, 2221161, 2221162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.7	95.6	P/P	90 - 110
Organic Carbon	97.6	98.2	P/P	90 - 110
Organic Carbon	98.2	96.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A103284

Included Lab Sample IDs: 2221151, 2221152, 2221153, 2221154, 2221155, 2221156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.8	91.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103284

Included Lab Sample IDs: 2221151, 2221152, 2221153, 2221154, 2221155, 2221156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	107	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A103332

Included Lab Sample IDs: 2221181, 2221182, 2221183, 2221184, 2221185, 2221186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	102	P/P	95 - 105
Barium	102	98.7	P/P	90 - 110
Calcium	102	104	P/P	90 - 110
Calcium	104	102	P/P	95 - 105
Iron	101	103	P/P	90 - 110
Iron	105	101	P/P	95 - 105
Magnesium	102	105	P/P	90 - 110
Magnesium	104	102	P/P	95 - 105
Manganese	102	101	P/P	90 - 110
Manganese	103	102	P/P	95 - 105
Potassium	99.0	101	P/P	90 - 110
Potassium	99.3	99.0	P/P	95 - 105
Sodium	99.3	99.5	P/P	95 - 105
Sodium	99.5	100	P/P	90 - 110
Strontium	96.1	95.2	P/P	90 - 110
Strontium	97.3	96.1	P/P	95 - 105
Tin	102	104	P/P	95 - 105
Tin	104	102	P/P	90 - 110
Titanium	99.7	98.5	P/P	90 - 110
Titanium	99.8	99.7	P/P	95 - 105
Vanadium	100	101	P/P	95 - 105
Vanadium	101	100	P/P	90 - 110
Zinc	102	105	P/P	95 - 105
Zinc	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103346

Included Lab Sample IDs: 2221157, 2221158, 2221159, 2221160, 2221161, 2221162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.0	P/P	90 - 110
Total-P	99.8	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103409

Included Lab Sample IDs: 2221157, 2221158, 2221159, 2221160, 2221161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	107	P/P	90 - 110
Kjeldahl Nitrogen	107	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103455

Included Lab Sample IDs: 2221157, 2221158, 2221159, 2221160, 2221161, 2221162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	98.5	P/P	90 - 110
Ammonia-N	98.5	98.4	P/P	90 - 110
Ammonia-N	99.2	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103527

Included Lab Sample IDs: 2221162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	108	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103531

Included Lab Sample IDs: 2221181, 2221182, 2221183, 2221184, 2221185, 2221186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.1	98.1	P/P	90 - 110
Aluminum	98.7	97.1	P/P	90 - 110
Antimony	101	99.4	P/P	90 - 110
Antimony	99.4	98.6	P/P	90 - 110
Arsenic	97.1	96.2	P/P	90 - 110
Arsenic	99.2	97.1	P/P	90 - 110
Beryllium	96.1	96.2	P/P	90 - 110
Beryllium	96.2	93.1	P/P	90 - 110
Boron	96.7	99.0	P/P	90 - 110
Boron	99.0	104	P/P	90 - 110
Cadmium	95.7	95.1	P/P	90 - 110
Cadmium	96.5	95.7	P/P	90 - 110
Chromium	95.2	94.0	P/P	90 - 110
Chromium	95.8	95.2	P/P	90 - 110
Cobalt	103	101	P/P	90 - 110
Cobalt	104	103	P/P	90 - 110
Copper	94.9	93.6	P/P	90 - 110
Copper	97.2	94.9	P/P	90 - 110
Lead	98.4	99.1	P/P	90 - 110
Lead	99.3	98.4	P/P	90 - 110
Molybdenum	95.7	94.9	P/P	90 - 110
Molybdenum	97.2	95.7	P/P	90 - 110
Nickel	95.0	93.9	P/P	90 - 110
Nickel	97.2	95.0	P/P	90 - 110
Selenium	97.2	97.8	P/P	90 - 110
Selenium	99.0	97.2	P/P	90 - 110
Thallium	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103531

Included Lab Sample IDs: 2221181, 2221182, 2221183, 2221184, 2221185, 2221186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	102	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103547

Included Lab Sample IDs: 2221181, 2221182, 2221183, 2221184, 2221185, 2221186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	101	99.2	P/P	90 - 110
Silver	99.2	90.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.731	
EPA 200.7 Rev. 4.4	Barium	98.6	100	104	103		0.543
	Calcium	106	107	111	110		0.975
	Iron	105	109	108	108		0.0581
	Magnesium	105	114	109	110		0.567
	Manganese	98.4	101	103	102		0.685
	Potassium	100	104	108	107		0.760
	Sodium	102	102	106	105		0.658
	Strontium	93.3	96.2	99.1	97.9		1.18
	Tin	101	105	105	105		0.279
	Titanium	95.7	99.4	102	103		0.734
	Vanadium	94.6	101	101	101		0.811
	Zinc	98.1	108	106	105		1.00
EPA 200.8 Rev. 5.4	Aluminum	96.6	97.2	96.9	94.8		0.266
	Antimony	101	99.9	99.2	98.8		0.669
	Arsenic	97.6	98.0	97.4	95.1		0.585
	Beryllium	91.5	88.9	87.8	88.7		1.28
	Boron	96.3	97.3	98.2	97.5		0.853
	Cadmium	94.0	94.1	93.9	93.3		0.276
	Chromium	96.1	97.3	95.3	93.2		2.04
	Cobalt	103	103	101	98.3		1.40
	Copper	96.4	97.1	95.8	91.2		1.34
	Lead	100	100	99.7	98.3		0.287
	Molybdenum	94.7	95.1	93.3	93.7		1.89
	Nickel	96.8	96.5	95.6	91.7		0.939
	Selenium	98.2	98.7	98.1	94.4		0.554
	Silver	104	89.0	101	105		12.3
	Thallium	99.5	101	101	102		0.224
EPA 300.0 Rev. 2.1	Chloride	98.0	96.1	96.9		0.391	
	Sulfate	97.2	96.5	96.5		1.50	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	98.8	98.8			0.0040
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	104	100			2.84
	Kjeldahl Nitrogen	106	105	102			2.04
	Kjeldahl Nitrogen	103	104	107			1.64
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	104	106	105			0.972
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103			0.972
SM 2120 B-2011	Color (true)	99.5				5.90	
	Color (true)	99.6				1.90	
SM 2320 B-2011	Total Alkalinity	95.5				1.25	
SM 2540 C-2011	TDS					0.905	
	TDS					2.88	
SM 4500 F-C-2011	Fluoride	103	102	102			0.0
SM 5310 B-2011	Organic Carbon	96.4	97.8	97.9			0.100

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2221181, 2221182, 2221183, 2221184, 2221185, 2221186

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2221181, 2221182, 2221183, 2221184, 2221185, 2221186
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2221157, 2221158, 2221159, 2221160, 2221161, 2221162
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2221157, 2221158, 2221159, 2221160, 2221161, 2221162
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2221157, 2221158, 2221159, 2221160, 2221161, 2221162
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2221157, 2221158, 2221159, 2221160, 2221161, 2221162
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2221163, 2221164, 2221165, 2221166, 2221167, 2221168
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2221181, 2221182, 2221183, 2221184, 2221185, 2221186
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2221157, 2221158, 2221159, 2221160, 2221161, 2221162

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/25/2021			01/26/2021 16:32	Yen Ta	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
EPA 200.7 Rev. 4.4	01/25/2021	01/27/2021 16:10	Elliott D. Healy	01/29/2021 12:09	Betina Topolski	2221181
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	01/29/2021 12:14	Betina Topolski	2221182
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	01/29/2021 12:21	Betina Topolski	2221183
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	01/29/2021 12:26	Betina Topolski	2221184
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	01/29/2021 12:58	Betina Topolski	2221185
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	01/29/2021 13:03	Betina Topolski	2221186
EPA 200.8 Rev. 5.4	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/10/2021 13:35	Alexander Thompson	2221181
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/10/2021 14:27	Alexander Thompson	2221182
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/10/2021 14:34	Alexander Thompson	2221183
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/10/2021 14:42	Alexander Thompson	2221184
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/10/2021 14:49	Alexander Thompson	2221185
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/10/2021 14:56	Alexander Thompson	2221186
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/11/2021 13:39	Alexander Thompson	2221181
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/11/2021 14:08	Alexander Thompson	2221182
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/11/2021 14:12	Alexander Thompson	2221183
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/11/2021 14:16	Alexander Thompson	2221184
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/11/2021 14:20	Alexander Thompson	2221185
	01/25/2021	01/27/2021 16:10	Elliott D. Healy	02/11/2021 14:25	Alexander Thompson	2221186
EPA 300.0 Rev. 2.1	01/25/2021			01/28/2021 15:59	Lipi Saha	2221156
	01/25/2021			01/28/2021 17:11	Lipi Saha	2221151
	01/25/2021			01/28/2021 17:23	Lipi Saha	2221152
	01/25/2021			01/28/2021 17:36	Lipi Saha	2221153
	01/25/2021			01/28/2021 17:48	Lipi Saha	2221154
	01/25/2021			01/28/2021 18:24	Lipi Saha	2221155
EPA 350.1 Rev. 2.0	01/25/2021			02/07/2021 10:35	Ping Hua	2221158
	01/25/2021			02/07/2021 10:36	Ping Hua	2221159
	01/25/2021			02/07/2021 10:38	Ping Hua	2221160
	01/25/2021			02/07/2021 10:39	Ping Hua	2221161
	01/25/2021			02/07/2021 10:47	Ping Hua	2221162
	01/25/2021			02/07/2021 11:53	Ping Hua	2221157
EPA 351.2 Rev. 2.0	01/25/2021	02/03/2021 12:10	Yen Ta	02/03/2021 19:21	Julia Storbeck	2221157
	01/25/2021	02/03/2021 12:10	Yen Ta	02/03/2021 19:25	Julia Storbeck	2221158
	01/25/2021	02/03/2021 12:10	Yen Ta	02/03/2021 19:34	Julia Storbeck	2221159
	01/25/2021	02/03/2021 12:10	Yen Ta	02/03/2021 19:35	Julia Storbeck	2221160
	01/25/2021	02/03/2021 12:10	Yen Ta	02/03/2021 19:37	Julia Storbeck	2221161
	01/25/2021	02/09/2021 11:53	Yen Ta	02/10/2021 15:13	Julia Storbeck	2221162
EPA 353.2 Rev. 2.0	01/25/2021			01/26/2021 10:13	Beverly Y. Sanders	2221157
	01/25/2021			01/26/2021 10:14	Beverly Y. Sanders	2221158

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	01/25/2021			01/26/2021 10:15	Beverly Y. Sanders	2221159
	01/25/2021			01/26/2021 10:16	Beverly Y. Sanders	2221160
	01/25/2021			01/26/2021 10:18	Beverly Y. Sanders	2221161
	01/25/2021			01/26/2021 10:19	Beverly Y. Sanders	2221162
EPA 365.1 Rev. 2.0	01/25/2021	01/29/2021 17:05	Shengyu Wang	02/01/2021 14:42	Shengyu Wang	2221157
	01/25/2021	01/29/2021 17:05	Shengyu Wang	02/01/2021 14:43	Shengyu Wang	2221158
	01/25/2021	01/29/2021 17:05	Shengyu Wang	02/01/2021 14:44	Shengyu Wang	2221159
	01/25/2021	01/29/2021 17:05	Shengyu Wang	02/01/2021 14:52	Shengyu Wang	2221160
	01/25/2021	01/29/2021 17:05	Shengyu Wang	02/01/2021 14:53	Shengyu Wang	2221161
	01/25/2021	01/29/2021 17:05	Shengyu Wang	02/01/2021 14:54	Shengyu Wang	2221162
EPA 365.1 Rev. 2.0 dissolved	01/25/2021			01/26/2021 15:16	Blanca Fach	2221163
	01/25/2021			01/26/2021 15:17	Blanca Fach	2221164
	01/25/2021			01/26/2021 15:18	Blanca Fach	2221165
	01/25/2021			01/26/2021 15:23	Blanca Fach	2221166
	01/25/2021			01/26/2021 15:24	Blanca Fach	2221167
	01/25/2021			01/26/2021 15:25	Blanca Fach	2221168
SM 2120 B-2011	01/25/2021			01/26/2021 18:59	Madeline Gruver	2221152
	01/25/2021			01/26/2021 19:00	Madeline Gruver	2221153, 2221154
	01/25/2021			01/26/2021 19:01	Madeline Gruver	2221155
	01/25/2021			01/26/2021 19:02	Madeline Gruver	2221156
	01/25/2021			01/26/2021 21:35	Madeline Gruver	2221151
SM 2320 B-2011	01/25/2021			01/28/2021 03:04	Dale L. Simmons	2221151
	01/25/2021			01/28/2021 03:15	Dale L. Simmons	2221152
	01/25/2021			01/28/2021 03:26	Dale L. Simmons	2221153
	01/25/2021			01/28/2021 03:36	Dale L. Simmons	2221154
	01/25/2021			01/28/2021 03:46	Dale L. Simmons	2221155
	01/25/2021			01/28/2021 03:56	Dale L. Simmons	2221156
SM 2340B	01/25/2021			01/29/2021 12:09	Betina Topolski	2221181
	01/25/2021			01/29/2021 12:14	Betina Topolski	2221182
	01/25/2021			01/29/2021 12:21	Betina Topolski	2221183
	01/25/2021			01/29/2021 12:26	Betina Topolski	2221184
	01/25/2021			01/29/2021 12:58	Betina Topolski	2221185
	01/25/2021			01/29/2021 13:03	Betina Topolski	2221186
SM 2540 C-2011	01/25/2021			01/29/2021 15:32	Yijie Li	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 2540 D-2011	01/25/2021			01/29/2021 15:32	Yijie Li	2221151, 2221152, 2221153, 2221154, 2221155, 2221156
SM 4500 F-C-2011	01/25/2021			01/28/2021 03:04	Dale L. Simmons	2221151
	01/25/2021			01/28/2021 03:15	Dale L. Simmons	2221152
	01/25/2021			01/28/2021 03:26	Dale L. Simmons	2221153

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	01/25/2021			01/28/2021 03:36	Dale L. Simmons	2221154
	01/25/2021			01/28/2021 03:46	Dale L. Simmons	2221155
	01/25/2021			01/28/2021 03:56	Dale L. Simmons	2221156
SM 5310 B-2011	01/25/2021			01/27/2021 03:53	Touraj Touran	2221160
	01/25/2021			01/27/2021 06:34	Touraj Touran	2221157
	01/25/2021			01/27/2021 07:12	Touraj Touran	2221158
	01/25/2021			01/27/2021 07:25	Touraj Touran	2221159
	01/25/2021			01/27/2021 07:37	Touraj Touran	2221161
	01/25/2021			01/27/2021 07:49	Touraj Touran	2221162